

I. AMENDMENTS TO THE CLAIMS

Claim 1. (Withdrawn) A formulation based on the PTFE, homopolymer or modified, comprising:

- 1) latex of said PTFE having a particle diameter between 5 and 100 nm, comprising an anionic fluorinated surfactant in an amount in the range 2-25% by weight based on the PTFE, preferably 3-20% by weight;
- 2) a non ionic fluorinated surfactant added to the PTFE latex in an amount in the range 18-60% by weight based on the PTFE, preferably 25-45% by weight.

Claim 2. (Withdrawn) A formulation according to claim 1, wherein the anionic fluorinated surfactants are selected from:



wherein: X = F, CF₃; M=H, NH₄, Na, Li, K;

T is a C₁-C₃ (per)fluoroalkyl group, optionally containing one Cl atom; preferably it is selected from -CF₃, -C₂F₅, -C₃F₇, -CF₂Cl, -C₂F₄Cl, -C₃F₆Cl; optionally one or two F atoms can be replaced by H;

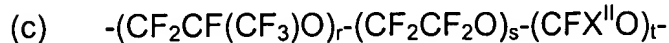
R_f is a (per)fluoropolyoxyalkylene radical having a number average molecular weight M_n in the range 200-2,000, preferably 350-1,000; R_f is selected in particular from the following classes:



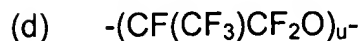
wherein m and n are integers such that the n/m ratio is in the range 0.01 – 0.5 and the molecular weight is in the above range;



wherein p and q are integers such that the q/p ratio is in the range 0.5-2 and the molecular weight is in the above range;



wherein r, s and t are integers such that r+s is in the range 1-50, the t/(r+s) ratio is in the range 0.01-0.05 and the molecular weight is in the above range;



wherein u is an integer such that the molecular weight is in the above range;

(e) $-(\text{C}\text{Y}\text{Z}-\text{CF}_2\text{CF}_2\text{O})_v-$

wherein Y and Z, equal to or different from each other, are F, Cl or H; v is a number such that the molecular weight is in the above range;

(f) $-(\text{CF}_2\text{CF}_2\text{O})_w-$

w is a number such that the molecular weight is in the above range.

Claim 3. (Withdrawn) A formulation according to claim 2, wherein the anionic fluorinated surfactants (IA) are the compounds having R_f of type (a):

$\text{T}-\text{O}-(\text{C}_3\text{F}_6\text{O})_m(\text{CF}_2\text{O})_n-\text{CF}_2-\text{COOM}$.

Claim 4. (Withdrawn) A formulation according to claim 1, wherein the compounds of formula (IA) are used in admixture with the following anionic surfactants:

$\text{CF}_3(\text{CF}_2)_n\text{COOM}$ (IIA)

wherein n can range between 4 and 12,

$-(\text{CF}_2-\text{CF}_2)_n-\text{CH}_2-\text{CH}_2-\text{SO}_3\text{M}$ (IIIA)

wherein $\text{M}=\text{H}, \text{NH}_4, \text{Na}, \text{Li}, \text{K}$ and n can range between 2 and 5.

Claim 5. (Withdrawn) A formulation according to claim 1, wherein the non ionic fluorinated surfactants added to the PTFE polymerization latex have the following structures:

$\text{CF}_3(\text{CF}_2)_y-\text{L}-\text{R}_h$ $y=3-20$ (IB)

$\text{T}-\text{O}-\text{R}_f-\text{L}-\text{R}_h$ (IIB)

wherein:

R_f is selected from the structures (a), (b), (c), (d), (e), (f) of claim 2;

L is a divalent organic group, a linking group between R_f and R_h , selected from: $-\text{CO}-\text{NR}^1-$, $-\text{CH}_2(\text{OCH}_2\text{CHR}^2)_a-\text{O}-$, $-\text{CH}_2(\text{OCH}_2\text{CHR}^2)_b-\text{O}-\text{CO}-$, $-\text{CH}_2\text{O}-(\text{CH}_2)_c-\text{CO}-\text{O}-$, $-\text{CH}_2-\text{CH}_2-\text{O}-$, $-\text{CH}_2-\text{CH}_2-$; wherein R^1 is $-\text{H}$ or a C_1-C_4 alkyl; R^2 is $-\text{H}$ or a C_1-C_2 alkyl; a, b are numbers from 0 to 6, preferably from 0 to 2; C is a number from 1 to 3;

R_h is a radical having a polyoxyalkylene structure selected from:

(i) $-(\text{CH}_2\text{CH}_2\text{O})_q\text{CH}_2\text{CH}_2\text{Z}$, wherein: q is an integer from 5 to 70, preferably from 6 to 25; Z is selected from $-\text{OH}$, C_1-C_4 alkoxy;

- (ii) $-(\text{CH}_2\text{CH}_2\text{O})_r(\text{CH}_2\text{CH}(\text{CH}_3)\text{O})_s\text{CH}_2\text{CHR}^3\text{Z}$, wherein $r+s$ is an integer from 5 to 70, preferably from 10 to 50; the r/s ratio is in the range 0.1-10, preferably 0.5-5; R^3 is selected between -H and $-\text{CH}_3$; Z is selected between -OH, $\text{C}_1\text{-C}_4$ alkoxy.

Claim 6. (Withdrawn) A formulation according to claim 5, wherein the non ionic surfactants are:

- the compounds of structure (IB) with $y = 5$, $\text{L} = -\text{CH}_2-\text{CH}_2-\text{O}-$, $\text{R}_h = -(\text{CH}_2\text{CH}_2\text{O})_q\text{CH}_2\text{CH}_2\text{OH}$ wherein $q = 6$;
- the compounds of structure (IIB) having R_f of structure (a) with $\text{T} = \text{C}_3\text{F}_6\text{Cl}$, m and n such to give a molecular weight in the range 450-650; $\text{L} = \text{CONH}-$; $\text{R}_h = -(\text{CH}_2\text{CH}_2\text{O})_q\text{CH}_2\text{CH}_2\text{OCH}_3$ wherein $q=21$.

Claim 7. (Withdrawn) A formulation according to claim 1, wherein the PTFE is modified with one or more comonomers containing at least one unsaturation of ethylene type in an amount up to 6% molar, preferably up to 1% molar.

Claim 8. (Withdrawn) A formulation according to claim 7, wherein the comonomers are of both hydrogenated and fluorinated type.

Claim 9. (Withdrawn) A formulation according to claim 8, wherein the hydrogenated comonomers are selected from ethylene, propylene, acrylic monomers, styrene monomers.

Claim 10. (Withdrawn) A formulation according to claim 8, wherein the fluorinated comonomers are selected from:

- $\text{C}_3\text{-C}_8$ perfluoroolefins;
- $\text{C}_2\text{-C}_8$ hydrogenated fluoroolefins, such as vinyl fluoride (VF), vinylidene fluoride (VDF), trifluoroethylene, hexafluoroisobutene, perfluoroalkylethylene $\text{CH}_2 = \text{CH-R}_f$, wherein R_f is a $\text{C}_1\text{-C}_6$ perfluoroalkyl;
- $\text{C}_2\text{-C}_8$ chloro- and/or bromo- and/or iodo-fluoroolefins;
- $\text{CF}_2=\text{CFOR}_f$ (per)fluoroalkylvinylethers (PAVE), wherein R_f is a $\text{C}_1\text{-C}_6$ (per)fluoroalkyl;

-CF₂=CFOX (per)fluoro-oxyalkylvinylethers, wherein X is: a C₁-C₁₂ alkyl, or a C₁-C₁₂ oxyalkyl, or a C₁-C₁₂ (per)fluoro-oxyalkyl having one or more ether groups; fluorodioxoles, preferably perfluorodioxoles.

Claim 11. (Withdrawn) A formulation according to claim 10, wherein the fluorinated comonomers are perfluoromethoxydioxole (MDO), perfluoropropylvinylether (PPVE), perfluoromethylvinylether (PMVE) and perfluoropropene (PFP).

Claim 12. (Currently Amended) Dielectric films obtained from a PTFE-based formulation comprising:

- 1) a PTFE latex made of particles whose diameter is in the range of 5 nm to 100 nm, comprising an anionic fluorinated surfactant in an amount in the range of 2% to 25% by weight, based on PTFE;
- 2) a non-ionic fluorinated surfactant added to the PTFE latex in an amount in the range of 18% to 60% by weight, based on the PTFE, wherein
the dielectric films are obtained from the formulation by depositing according to claim 1, by the deposition of the formulation onto a substrate, then on a substratum, subsequent film sintering the film obtained at a temperature above higher than the PTFE melting T melting point, and then subsequent air-cooling.

Claim 13. (Currently Amended) Dielectric films according to claim 12, wherein the deposition is carried out by spin coating at a spinning rate in the range of 3,000 rpm to 10,000 ~~3,000—10,000~~ rpm for a time comprised between 30 seconds and 5 minutes and in which the sintering temperature is higher than 320°C ~~320°C~~, preferably in the range ~~390°C—410°C~~.

Claim 14. (Currently Amended) Dielectric films according to claim 12 having a thickness lower than 200 nm ~~200 nm~~, preferably in the range ~~50 nm—150 nm~~, a dielectric constant lower than 2.2, a dielectric strength higher than 4 MV/cm and a weight loss at 425°C in the range of 0.0008%/min to 0.02%/min ~~0.0008—0.02%/min~~.

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Claim 15. (Currently Amended) A method for the insulation of conductors in integrated circuits comprising utilizing ~~Use of~~ dielectric films according to claim 12 ~~for the insulation of conductors in integrated circuits.~~